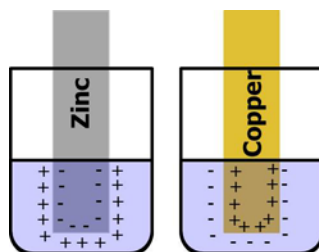


**T09D04 – (19.1) Standard Electrode Potential**

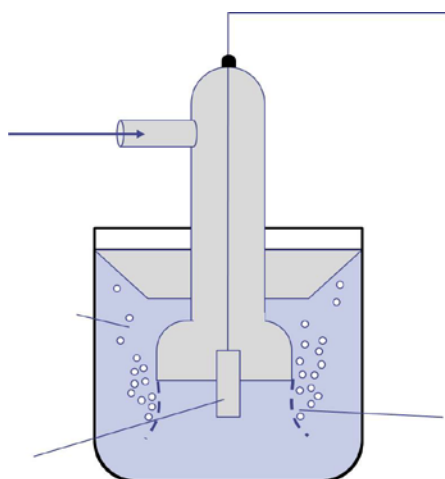
Name.....

1. 19.1.1 Describe the standard hydrogen electrode. (2)
- a. Describe what redox equilibrium is:



- b. What are the three types of half cells?
- c. What happens when any two half cells are put together?
- d. What does the electrode potential depend on, and what does it not depend on?

- e. What is the Standard Hydrogen Electrode used for? Label the important parts and write the equilibrium equation:



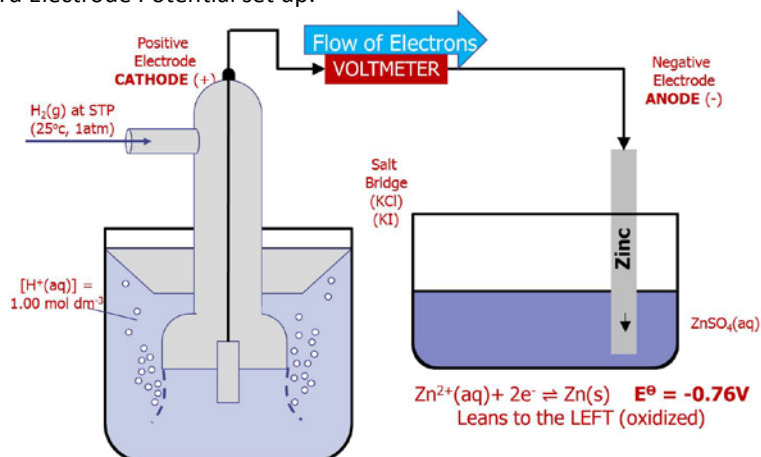
- i. What functions does the platinum electrode serve?
- ii. What are the standard conditions?

2. 19.1.2 Define the term standard electrode potential ( $E^\ominus$ ). (1)

a. Define Standard Electrode Potential:

b. What do the values of  $E^\ominus$  represent?

c. The Standard Electrode Potential set up:



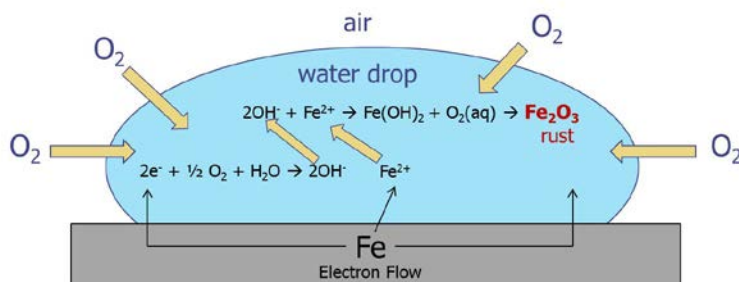
## 3. 19.1.3 Calculate cell potentials using standard electrode potentials. (2)

a. To calculate the cell potential, you must alter one of the equilibrium equations as they are both initially written in reduction form. Explain how this is completed:

b. What does the end value (result) mean in terms of positive and negative values?

c. Calculate the cell potential between Mg and Ag:

d. How does Iron rust?



## 4. 19.1.4 Predict whether a reaction will be spontaneous using standard electrode potential values. (3)

a. How can we apply Gibbs Free Energy to the spontaneity of redox reactions? Provide the equation and define each variable.

b. Use the reaction of  $\text{Zn(s)} + \text{Cu}^{2+}(\text{aq}) \rightarrow \text{Zn}^{2+}(\text{aq}) + \text{Cu(s)}$  as an example:

